

We claim:

- 575 1. A large optically switched communication network comprising:
- (A) a plurality of more than 20 area code nodes;
 - (B) a network of optical fibers;
 - (C) a plurality dense wavelength division multiplexing components for providing
580 at least 100 wavelength communication channels through each optical fiber
in said network of optical fibers;
 - (D) a plurality of processor controlled optical switches located at each of said
area code nodes;
 - (E) a plurality of processors, said plurality of processors being programmed with
585 a routing algorithm for controlling said optical switches to permit a plurality
of single wavelength communication links through said network of optical
fibers from each of said plurality of area code nodes to every other one of
said area code nodes;
 - (F) optical signal generator for generating a plurality of reference wavelength
signals for use at each of the area code nodes.
- 590 wherein each communication link from one area code node to another area code node
within the network routed without a change in wavelength and without optical-electrical
optical conversion..
- 595 2. The network as in Claim 1 wherein said at least 100 wavelength communication
channels is at least 300 wavelength communication channels.
- 600 3. A nation scale high bandwidth circuit-switched communication network comprising:
- (A) a fiber optic network comprising a large number of optical fibers;
 - (B) at least one reference optical signal generator to provide a plurality of optical
carrier frequencies and sub-frequencies;
 - (C) a plurality of modulators to modulate user signals onto said optical sub-
frequencies;

(D) a plurality of passive optical connectors to combine said user signals carried by a number of optical fibers into a smaller number of optical fibers onto a smaller number of optical fibers;

605 (E) a plurality of all optical switches to route DWDM channels carried on said fibers from source area codes to destination area codes;

(F) and plurality of demodulators to demodulate user signals from said optical sub-frequencies;

610 wherein no optical wavelength conversion is necessary in routing all source signals to all destinations.